

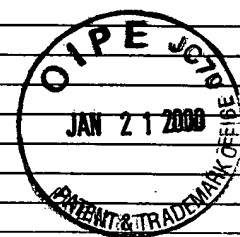
Please type a plus sign (+) inside this box →



Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

<p>Substitute for form 1449A/PTO</p> <p>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</p> <p>(use as many sheets as necessary)</p>		Complete if Known	
		Application Number	09/453,109
		Filing Date	December 2, 1999
		First Named Inventor	Mark R. Prausnitz
		Group Art Unit	
		Examiner Name	
Sheet 1 of 7	Attorney Docket Number	GTRC 2139	

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	US Patent Document		Name of Patentee or Applicant of Cited Document	Date of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
MMK		Re. 25,637		Kravitz, et al.	09-08-1964	
MMK		2,893,392		Wagner, et al.	07-07-1959	
MMK		3,034,507		McConnell, et al.	05-15-1962	
MMK		3,086,530		Groom	04-23-1963	
MMK		3,123,212		Taylor, et al.	03-03-1964	
MMK		3,136,314		Kravitz	06-09-1964	
MMK		3,221,739		Rosenthal	12-07-1965	
MMK		3,221,740		Rosenthal	12-07-1965	
MMK		3,556,080		Hein	01-19-1971	
MMK		3,596,660		Melone	08-03-1971	
MMK		3,675,766		Rosenthal	07-11-1972	
MMK		3,918,449		Pistor	11-11-1975	
MMK		3,964,482		Gerstel, et al.	07-22-1976	
MMK		4,109,655		Chacornac	08-29-1978	
MMK		4,159,659		Nightingale	07-03-1979	
MMK		4,222,392		Brennan	09-16-1980	
MMK		4,320,758		Eckenhoff, et al.	03-23-1982	
MMK		4,771,660		Yacowitz	09-20-1988	
MMK		4,798,582		Sarath, et al.	01-17-1989	
MMK		4,921,475		Sibalis	05-01-1990	
MMK		4,969,468		Byers, et al.	11-13-1990	
MMK		5,035,711		Aoki, et al.	07-30-1991	
MMK		5,054,339		Yacowitz	10-08-1991	
MMK		5,138,220		Kirkpatrick	08-11-1992	
MMK		5,250,023		Lee, et al.	10-05-1993	



Examine Signature	<i>Matthew P. ...</i>	Date Considered	6/8/2001
-------------------	-----------------------	-----------------	----------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to application.

¹ Unique citation designation number ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SENT TO: Assistant Commission for Patent, Washington, DC 20231.

Please type a plus sign (+) inside this box →



PTO/SB/08A (10-96)
Approved for use through 10/31/99. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

+

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449A/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/453,109
		Filing Date	December 2, 1999
		First Named Inventor	Mark R. Prausnitz
		Group Art Unit	
		Examiner Name	
Sheet 2 of 7	Attorney Docket Number	GTRC 2139	

U.S. PATENT DOCUMENTS						
Examiner Initials*	Cite No. ¹	US Patent Document		Name of Patentee or Applicant of Cited Document	Date of Cited Document MM-DD-YYYY	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number	Kind Code ² (if known)			
MLK		5,279,544		Gross, et al.	01-18-1994	
MLK		5,279,552		Magnet	01-18-1994	
MLK		5,335,670		Fishman	08-09-1994	
MLK		5,364,374		Morrison, et al.	11-15-1994	
MLK		5,383,512		Jarvis	01-24-1995	
MLK		5,401,242		Yacowitz	03-28-1995	
MLK		5,457,041		Ginaven, et al.	10-10-1995	
MLK		5,527,288		Gross, et al.	06-18-1996	
MLK		5,582,184		Erickson, et al.	12-10-1996	
MLK		5,591,139		Lin, et al.	01-07-1997	
MLK		5,605,662		Heller, et al.	02-25-1997	
MLK		5,611,806		Jang	03-18-1997	
MLK		5,611,809		Marshall, et al.	03-18-1997	
MLK		5,618,295		Min	04-08-1997	
MLK		5,632,957		Heller, et al.	05-27-1997	
MLK		5,658,515		Lee, et al.	08-19-1997	
MLK		5,697,901		Eriksson	12-16-1997	
MLK		5,801,057		Smart, et al.	09-01-1998	
MLK		5,843,114		Jang	12-01-1998	
MLK		5,848,991		Gross, et al.	12-15-1998	
MLK		5,852,495		Parce	12-22-1998	
MLK		5,858,188		Soane, et al.	01-12-1999	
MLK		5,865,786		Sibalis, et al.	02-02-1999	
MLK		5,876,675		Kennedy	03-02-1999	
MLK		5,879,326		Godshall, et al.	03-09-1999	
MLK		5,883,211		Sassi, et al.	03-16-1999	

OIPE
JAN 21 2000
PATENT & TRADEMARK OFFICE

Examine Signature: <i>Matthew Krenner</i>	Date Considered: <i>6/8/2001</i>
---	----------------------------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to application.

¹ Unique citation designation number ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you are required to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SENT TO: Assistant Commissioner for Patent, Washington, DC 20231.

+

Please type a plus sign (+) inside this box →

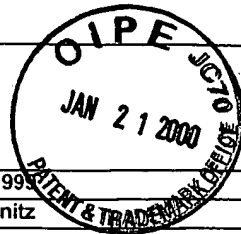


PTO/SB/08A (10-96
Approved for use through 10/31/99. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

+

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449A/PTO		Complete if Known	
INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Application Number	09/453,109
		Filing Date	December 2, 1999
		First Named Inventor	Mark R. Prausnitz
		Group Art Unit	
		Examiner Name	
Sheet 4 of 7	Attorney Docket Number	GTRC 2139	



OTHER ART – NON PATENT LITERATURE DOCUMENTS			
Examiner's Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
MYK		"Single-crystal whiskers," <i>Biophotonics Int'l</i> p. 64 (Nov./Dec. 1996).	
MYK		"101 Uses for Tiny Tubules," <i>Science</i> 247 (1990).	
MYK		AMSDEN & GOOSEN, "Transdermal Delivery of Peptide and Protein Drugs: an Overview," <i>AIChE Journal</i> 41(8):1972-1997 (1995).	
MYK		BRONAUGH & MAIBACH, <u>Percutaneous Absorption, Mechanisms--Methodology--Drug Delivery</u> (Marcel Dekker, New York 1989).	
MYK		BRUMLIK & MARTIN, "Template Synthesis of Metal Microtubules," <i>J. Am. Chem. Soc.</i> 113:3174-3175 (1991).	
MYK		DESPONT, et al., "High-Aspect-Ratio, Ultrathick, Negative-Tone Near-UV Photoresist for MEMS," <i>Proc. of IEEE 10th Annual International Workshop on MEMS</i> , Nagoya, Japan, pp. 518-522 (Jan. 26-30, 1997).	
MYK		EDELL, et al., "Factors Influencing the Biocompatibility of Insertable Silicon Microshafts in Cerebral Cortex," <i>IEEE Transactions on Biomedical Engineering</i> 39(6):635-43 (1992).	
MYK		FRAZIER & ALLEN, "Metallic Microstructures Fabricated Using Photosensitive Polyimide Electroplanting Molds," <i>Journal of Microelectromechanical Systems</i> 2:87-97 (1993).	
MYK		FRAZIER, et al., "Two dimensional metallic microelectrode arrays for extracellular stimulation and recording of neurons", <i>IEEE Proceedings of the Micro Electro Mechanical Systems Conference</i> , pp. 195-200 (1993).	
MYK		HADGRAFT & GUY, eds., <u>Transdermal Drug Delivery: Developmental Issues and Research Initiatives</u> (Marcel Dekker, New York 1989).	

Examiner's Signature	Date Considered
----------------------	-----------------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you require to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

+

Please type a plus sign (+) inside this box →

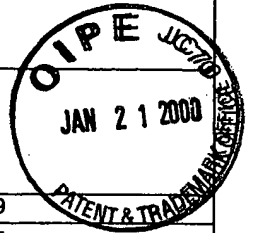


PTO/SB/08A (10-96)
Approved for use through 10/31/99. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

+

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Complete if Known			
		Application Number	09/453,109		
		Filing Date	December 2, 1999		
		First Named Inventor	Mark R. Prausnitz		
		Group Art Unit			
		Examiner Name			
Sheet	5	of	7	Attorney Docket Number	GTRC 2139



OTHER ART – NON PATENT LITERATURE DOCUMENTS			
Examiner's Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
MP		HAGA, et al., "Transdermal iontophoretic delivery of insulin using a photoetched microdevice," <i>J. Controlled Release</i> 43:139-49 (1997).	
MP		HASHMI, et al., "Genetic Transformation of Nematodes Using Arrays of Micromechanical Piercing Structures," <i>BioTechniques</i> 19(5):766-70 (1995).	
MP		HENRY, et al., "Microfabricated microneedles: A novel method to increase transdermal drug delivery" <i>J. Pharm. Sci.</i> 87:922-25 (1998).	
MP		HENRY, et al., "Micromachined Needles for the Transdermal Delivery of Drugs," <i>Micro Electro Mechanical Systems</i> , Heidelberg, Germany, pp. 494-98 (Jan. 26-29, 1998).	
MP		HOFFERT, "Transcutaneous methods get under the skin," <i>The Scientist</i> 12 (1998).	
MP		JAEGER, <i>Introduction to Microelectronic Fabrication</i> (Addison-Wesley Publishing Co., Reading MA 1988).	
MP		JANSEN, et al., "The Black Silicon Method IV: The Fabrication of Three-Dimensional Structures in Silicon with High Aspect Ratios for Scanning Probe Microscopy and Other Applications," <i>IEEE Proceedings of Micro Electro Mechanical Systems Conference</i> , pp. 88-93 (1995).	
MP		LAERMER, et al., "Bosch Deep Silicon Etching: Improving Uniformity and Etch Rate for Advanced MEMS Applications," <i>Micro Electro Mechanical Systems</i> , Orlando, FL, USA, (Jan. 17-21, 1999);	
MP		LANGER, "Drug Delivery and Targeting," <i>Nature</i> 392:5-10 (1998).	
MP		LEHMANN, "Porous Silicon--A New Material for MEMS", <i>IEEE Proceedings of the Micro Electro Mechanical Systems Conference</i> , pp. 1-6 (1996).	

Examiner's Signature		Date Considered	6/8/2001
----------------------	--	-----------------	----------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you require to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

+

Please type a plus sign (+) inside this box →



PTO/SB/08A (10-96
Approved for use through 10/31/99. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

+

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Complete if Known			
		Application Number	09/453,109		
		Filing Date	December 2, 1999		
		First Named Inventor	Mark R. Prausnitz		
		Group Art Unit			
		Examiner Name			
Sheet	6	of	7	Attorney Docket Number	GTRC 2139

OTHER ART – NON PATENT LITERATURE DOCUMENTS			
Examiner's Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
mk		LIN, et al., "Silicon Processed Microneedles," <i>The 7th International Conference on Solid-State Sensors and Actuators</i> 237-240 (1993).	
mk		MARTIN, et al., "Template Synthesis of Organic Microtubules," <i>J. Am. Chem. Soc.</i> 112:8976-8977 (1990).	
mk		NAJAFI, et al., "Strength Characterization of Silicon Microprobes in Neurophysiological Tissues," <i>IEEE Transactions on Biomedical Engineering</i> 37(5): 474-481 (1990).	
mk		PRAUSNITZ, "Reversible Skin Permeabilization for Transdermal Delivery of Macromolecules," <i>Critical Reviews in Therapeutic Drug Carrier Systems</i> 37(5): 474-481 (1990).	
mk		<i>Proceedings of the IEEE Micro Electro Mechanical Systems Conference 1987-1998</i> ; Rai-Choudhury, ed., <i>Handbook of Microlithography, Micromachining & Microfabrication</i> (SPIE Optical Engineering Press, Bellingham, WA 1997).	
mk		QUAN, "Plasma etch yields microneedle arrays," <i>Electronic Engineering Times</i> 63:63-64 (1998).	
mk		REISS, "Glucose- and Blood-Monitoring Systems Vie for Top Spot," <i>Biophotonics Int'l</i> , pp. 43-45 (1997).	
mk		RUNYAN, et al., <i>Semiconductor Integrated Circuit Processing Technology</i> , Addison-Wesley Publishing Co.:Reading, MA, 1990.	
mk		SCHIFT, et al., "Fabrication of replicated high precision insert elements for micro-optical bench arrangements" <i>Proc. SPIE - International Soc. Optical Engineer</i> 3513:122-134 (1998).	
mk		TALBOT & PISANO, "Polymolding: Two Wafer Polysilicon Micromolding of Closed-Flow Passages for Microneedles and Microfluidic Devices," <i>Solid-State Sensor and Actuator Workshop Hilton Head Island, South Carolina, June 8-11</i> 266-268 (1988).	

Examiner's Signature	<i>Matthew Kremer</i>	Date Considered	6/8/2001
----------------------	-----------------------	-----------------	----------

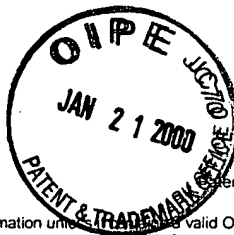
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you require to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.

+

Please type a plus sign (+) inside this box →



PTO/SB/08A (10-96)
Approved for use through 10/31/99. OMB 0651-0031
Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number

Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT (use as many sheets as necessary)		Complete if Known			
		Application Number	09/453,109		
		Filing Date	December 2, 1999		
		First Named Inventor	Mark R. Prausnitz		
		Group Art Unit			
		Examiner Name			
Sheet	7	of	7	Attorney Docket Number	GTRC 2139

OTHER ART - NON PATENT LITERATURE DOCUMENTS			
Examiner's Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ²
myk		TRIMMER, et al., "Injection of DNA into Plant and Animal Tissues with Micromechanical Piercing Structures," <i>IEEE Proceedings of Micro Electro Mechanical Systems Conference</i> , pp. 111-15 (1995).	
myk		WEBER, et al., "Micromolding - a powerful tool for the large scale production of precise microstructures," <i>Proc. SPIE - International Soc. Optical Engineer</i> 2879:156-167 (1996).	
myk		ZUSKA, "Microtechnology Opens Doors to the Universe of Small Space," <i>Medical Device and Diagnostic Industry</i> , p. 131 (1997).	

Examiner's Signature	<i>Matthew Kremer</i>	Date Considered	6/8/2001
----------------------	-----------------------	-----------------	----------

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ Unique citation designation number ² See attached Kinds of U.S. Patent Documents. ³ Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). ⁴ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁵ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. ⁶ Applicant to place a check mark here if English language Translation is attached.

Burden Hour Statement: This form is estimated to take 2.0 hours to complete. Time will vary depending upon the needs of the individual case. Any comments on the amount of time you require to complete this form should be sent to the Chief Information Officer, Patent and Trademark Office, Washington, DC 20231. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Assistant Commissioner for Patents, Washington, DC 20231.